

Dave Morey
Vice President
Farley Project

**Southern Nuclear
Operating Company, Inc.**
Post Office Box 1295
Birmingham, Alabama 35201
Tel 205.992.5131

May 8, 2000



Energy to Serve Your WorldSM

Docket No.: 50-348

NEL-00-0127

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

**Joseph M. Farley Nuclear Plant
Unit 1 Licensee Event Report 2000-005-00
Loss of Site Power While Defueled Due to Loss of 1A Startup Transformer**

Ladies and Gentlemen:

Joseph M. Farley Nuclear Plant – Unit 1 Licensee Event Report (LER) No. 2000-005-00 is being submitted in accordance with 50.73(a)(2)(iv) and 50.73(a)(2)(v). There are no NRC commitments in the LER.

If you have any questions, please advise.

Respectfully submitted,

Dave Morey

EWC/maf ler2000-005-00u1.doc
Attachment

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U. S. Nuclear Regulatory Commission

cc: Southern Nuclear Operating Company
Mr. L. M. Stinson, General Manager - Farley

U. S. Nuclear Regulatory Commission, Washington, D. C.
Mr. L. M. Padovan, Licensing Project Manager – Farley

U. S. Nuclear Regulatory Commission, Region II
Mr. L. A. Reyes, Regional Administrator
Mr. T. P. Johnson, Senior Resident Inspector – Farley

NRC FORM 366 (6-1998)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED OMB NO. 3150-0104 EXPIRES: 06/30/2001 <small>Estimated burden per response to comply with this mandatory information request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.</small>					
LICENSEE EVENT REPORT (LER) <small>(See reverse for required number of digits/characters for each block)</small>										
FACILITY NAME (1) Joseph M. Farley Nuclear Plant - Unit 1					DOCKET NUMBER (2) 0 5 0 0 0 3 4 8		PAGE (3) 1 OF 5			
TITLE (4) Loss of Site Power While Defueled Due to Loss of 1A Startup Transformer										
EVENT DATE (5) MONTH DAY YEAR 0 4 0 9 2 0 0 0			LER NUMBER (6) YEAR SEQUENTIAL NUMBER REVISION NUMBER 2 0 0 0 0 0 5 0 0			REPORT DATE (7) MONTH DAY YEAR 0 5 0 8 2 0 0 0			OTHER FACILITIES INVOLVED (8) FACILITY NAME DOCKET NUMBER 0 5 0 0 0 FACILITY NAME DOCKET NUMBER 0 5 0 0 0	
OPERATING MODE (9) 6		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
POWER LEVEL (10) 0 0 0		<input type="checkbox"/> 20.2201(b)		<input type="checkbox"/> 20.2203(a)(2)(v)		<input type="checkbox"/> 50.73(a)(2)(i)		<input type="checkbox"/> 50.73(a)(2)(viii)		
		<input type="checkbox"/> 20.2203(a)(1)		<input type="checkbox"/> 20.2203(a)(3)(i)		<input type="checkbox"/> 50.73(a)(2)(ii)		<input type="checkbox"/> 50.73(a)(2)(x)		
		<input type="checkbox"/> 20.2203(a)(2)(i)		<input type="checkbox"/> 20.2033(a)(3)(ii)		<input type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 73.71		
		<input type="checkbox"/> 20.2203(a)(2)(ii)		<input type="checkbox"/> 20.2033(a)(4)		<input checked="" type="checkbox"/> 50.73(a)(2)(iv)		<input type="checkbox"/> OTHER		
		<input type="checkbox"/> 20.2203(a)(2)(iii)		<input type="checkbox"/> 50.38(c)(1)		<input checked="" type="checkbox"/> 50.73(a)(2)(v)		Specify in Abstract below		
		<input type="checkbox"/> 20.2203(a)(2)(iv)		<input type="checkbox"/> 50.38(c)(2)		<input type="checkbox"/> 50.73(a)(2)(vii)		or in NRC Form 366A		
LICENSEE CONTACT FOR THIS LER (12)										
NAME L. M. Stinson, General Manager Nuclear Plant						TELEPHONE NUMBER (include area code) 3 3 4 - 8 9 9 - 5 1 5 6				
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER			SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	
SUPPLEMENTAL REPORT EXPECTED (14)						EXPECTED SUBMISSION DATE (15)				
YES (If yes, complete EXPECTED SUBMISSION DATE)						<input checked="" type="checkbox"/> NO		MONTH DAY YEAR		
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-space typewritten lines) (16)										
<p>On April 9, 2000 at 10:00 with the reactor defueled, Farley Nuclear Plant Unit 1 experienced a Loss of Offsite Power (LOSP), resulting in an Engineered Safety Feature (ESF) actuation. This occurred due to a trip of the operating 1A Startup Transformer (SUT) which was supplying both trains of emergency AC busses from offsite power. As designed, the A Train emergency diesel generators (EDG) started and reenergized the A train emergency busses within approximately 12 seconds. Spent fuel pool cooling, which was deenergized at the initiation of the event, was restored at 10:18, and at 10:19 offsite power was restored to B Train emergency busses. The plant's electrical power systems were subsequently returned to normal alignment by 10:55.</p> <p>A root cause investigation concluded that the cause of the event was an inadvertent short circuit across one of the 1A SUT protection relays to the trip bus circuits. Panel cleaning activity in progress when the event occurred was not appropriate for the plant electrical alignment in place. The cleaning, begun earlier, had been inappropriately allowed to recommence after conditions changed. The cause of this inappropriate activity was a failure in work coordination in that work was recommenced with neither Shift Supervisor awareness of the activity, nor worker awareness of current plant conditions. The maintenance procedure for cleaning the Metering and Relay Panels has been revised to require notification to the Shift Supervisor for each shift. Appropriate operating procedures for evolutions in which one train of equipment is removed from service, leaving only a single train available, will be revised to establish positive controls to protect the availability of the remaining train by July 31, 2000. The Operations Shift Foreman involved has been coached and shift personnel have been trained on this event. The shift operating crew erroneously determined that this event was a 4 hour report vs. a NOUE. Licensed personnel have received training on proper classification of LOSP events.</p>										

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TEXT (If more space is required, use additional copies of NRC Form 366A)(17)

Westinghouse -- Pressurized Water Reactor
Energy Industry Identification Codes are identified in the text as [XX].

Description of Event

On April 9, 2000 at 10:00 with the reactor defueled, Farley Nuclear Plant Unit 1 experienced a Loss of Offsite Power (LOSP), resulting in an Engineered Safety Feature (ESF) actuation, due to a trip of the operating 1A Startup Transformer (SUT)[EA].

At the start of the event, the Unit 1 reactor was defueled. Due to system alignments for scheduled integrated Safety Injection- Loss of Offsite Power (SI/LOSP) surveillance testing, the 1B (SUT)[EA] was available but not aligned to the emergency power distribution system, and both the A and B Train emergency busses were powered from the 1A SUT. The B Train diesel generator [EK] was out of service for routine outage maintenance. At the time of the event, restoration of alignment from a portion of the SI/LOSP test was in progress.

Approximately one month prior to the event, earlier in the refueling outage, work was released, under appropriate plant conditions, to perform cleaning and inspection activities in the Metering and Relay Panels including 1A SUT Metering and Relay Panel. Work completion was delayed, and work was recommenced the morning of the event. Craft personnel contacted the on-duty Shift Foreman Operating and obtained permission to recommence the activity. This cleaning and inspection activity was also in progress at the time of the event.

At 10:00:35, the high voltage switchyard supply breakers to the 1A SUT tripped, resulting in a Loss of Offsite Power (LOSP) to Unit 1. As designed, the A Train emergency diesel generators (EDG) started and reenergized the A train emergency busses within approximately 12 seconds. Spent fuel pool cooling [DA], which was deenergized at the initiation of the event, was restored at 10:18, and at 10:19 offsite power was restored to B Train emergency busses. The plant's electrical power systems were subsequently returned to normal alignment by 10:55.

Following the event no protective relays associated with the 1A SUT or its associated offsite supply breakers were found to be actuated and 1A SUT parameters were found to be normal. A root cause investigation was initiated to identify the cause of the SUT trip actuation.

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TEXT (If more space is required, use additional copies of NRC Form 366A)(17)

The root cause investigation examined the following with results as noted:

Evaluation of cleaning process for potential for causing inadvertent shorts- probable cause
Functionally testing of all relaying associated with the 1A SUT- no failures
Checking the insulation resistance of the control cables in the trip circuitry- all acceptable
Walk down of the protective relay circuitry to verify conformance to design- no discrepancies
Bright light and magnifying glass inspection of all electrical connections in associated panel wiring for loose connections, burn marks, frayed wires, etc.- none found
Examination of design for sneak circuits- none identified
Evaluation of potential sources of electromagnetic interference- amperage requirements for relay actuation eliminated this as a possible cause.
Possible connections between the B Train sequencer testing and the 1A SUT- none identified.

At the time of this event, the shift operating crew made an implementation error in determining that this event was a 4 hour non emergency report vs. a NOUE based on: The 1B SUT was available and energized from offsite power sources although it was not aligned to the emergency busses; the reactor was defueled; and Technical Specifications for emergency busses were not applicable to this plant condition. On review of this event on April 10, 2000 it was determined that a NOUE should have been declared, beginning at 10:00 on April 9, 2000 and terminating at 10:19 on April 9, 2000. Notifications to agencies were then completed as required.

Cause of Event

A root cause investigation concluded that the cause of the event was an inadvertent short circuit across one of the 1A SUT protection relays. At the time of the event, cleaning of the 1A SUT Metering and Relay Panel was in progress. This activity was not appropriate for the plant electrical alignment in place at the time of the event. The work had begun under favorable plant conditions and after a delay had been allowed to recommence after conditions changed. The cause of this inappropriate activity was a failure in work coordination to prevent loss of a single remaining offsite AC source.

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TEXT (If more space is required, use additional copies of NRC Form 366A)(17)

Specific contributing causes were:

Cognitive personnel error occurred in that the SFO did not recognize the significance of the panel cleaning and therefore did not notify the SS of the recommencement of the activity, nor notify the maintenance personnel of the current plant status. Specific administrative controls to ensure protection of remaining AC sources or other train related equipment, when one train is removed from service, were insufficient. The panel cleaning procedure was inadequate in that it did not require maintaining contact with the Shift Supervisor for each shift during this long-term evolution.

The cause of the misclassification of the NOUE was personnel error in misinterpreting procedural guidance. The emergency classification and actions procedure defined a LOSP as a NOUE, but did not further define a LOSP as being determined at the emergency busses. Since the 1B SUT remained energized and connected to the switchyard throughout the event and available to be connected to the B Train emergency busses, and the emergency busses were not required to be energized with the reactor defueled, the operating crew erroneously determined that a LOSP had not occurred.

Safety Assessment

The reactor had been shut down for over 30 days at the time of this occurrence. The Spent Fuel Pool experienced no measurable temperature rise during this event. Plant systems functioned as designed during this event.

Except for the automatic start of the shared A train diesel generators, Unit 2 was unaffected by this event.

The health and safety of the public were unaffected by this event.

This event represents a Safety System Functional Failure.

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Corrective Action

Appropriate operating procedures for evolutions in which one train of equipment is removed from service, leaving only a single train available, will be revised to establish positive controls to protect the availability of the remaining train by July 31, 2000 or prior to entering similar plant conditions.

The maintenance procedure for cleaning the Metering and Relay Panels has been revised to require notification to the Shift Supervisor prior to work at the beginning of each shift, and to specify additional requirements for insulation of tools and supplies used near energized equipment.

The Shift Foreman Operating has received coaching emphasizing the importance of clearly understanding the nature of the equipment and work to be released. Operations shift supervisory personnel have been trained on this event.

Licensed personnel have received training on proper classification of LOSP events.

Additional Information

A 4 hour non-emergency report was made to the NRC at 11:32 on April 9, 2000, per 10CFR50.72.

As an enhancement, the Emergency Classification and Actions procedure will be revised to define a LOSP as being determined at the emergency busses, by June 15, 2000.

The following LER has been submitted in the past 2 years on a combination of personnel error and inadequate procedure:

LER 1998-003-00 Unit 1, Waste Gas Decay Tank Hydrogen and Oxygen Exceeded Concentration Limits